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SUBJECT—

TITLE

MEMORANDUM FOR THE FILES, FOREST INSECT LABORATORY,
COEUR D'ALENE, IDAHO

RE: NOTES ON BARK BEETLE ACTIVITY ON THE
GALLATIN NATIONAL FOREST - 1939

by
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March 4, 1940

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FOREST INSECT
LABORATORY

Forest Insect Laboratory
Coeur d'Alene, Idaho
March 4, 1940

MEMORANDUM FOR THE FILES, FOREST INSECT LABORATORY, COEUR D'ALENE, IDA.

Re: Notes on Bark Beetle Activity on
the Gallatin National Forest - 1939

INTRODUCTION

To study the progress of the large Beaverhead outbreak which was moving south and east, threatening the vast lodgepole pine stands of the Yellowstone Park and adjoining forests, detailed surveys were made of the mountain pine beetle infestation on the Gallatin National Forest as part of a general survey program. Fortunately natural control factors removed the impetus which the outbreak on the Beaverhead Forest had acquired and a drastic reduction occurred in 1932-33. No such reduction took place on the Gallatin that year, but the increase was slight. In 1934, when the last detailed survey was made, the increase was nearly 100 percent. Since then the data from general observations, a check strip, and scattered survey strips have been relied upon to indicate the status of the outbreaks.

LOSSES FROM THE MOUNTAIN PINE BEETLE SINCE 1934

The check strip on Squaw Creek and general observations indicated an average infestation of about .28 tree per acre in 1935. In 1936 the same source showed .58 tree per acre. Secondary insects had killed .03 tree per acre.

Data from a few strips run in 1937, 1938, and 1939 revealed a general but light infestation over the entire forest. The average number of attacked trees noted on these strips, including whitebark pine, Douglas fir, and Engelmann spruce, as well as lodgepole pine, is shown in the following tabulation:

BARK BEETLE ACTIVITY ON THE GALLATIN FOREST
1937, 1938, and 1939

Attacked trees per acre:	Mountain pine beetle: L.P. pine	in Wb. pine	Douglas fir beetle in Douglas fir	Engelmann spruce beetle in Engelmann spruce	Secondary bark beetles in LP. & Wb. pine
1937	.06	.08	.03	.38	.01
1938	.07	.36	.01	.02	.04
1939	.12	.39	.04	.01	.13

From the preceding figures it might be judged that decided increases may be occurring in lodgepole pine in 1939, due to both the mountain pine beetle and to secondary insects. That, however, is not a true picture of the situation. Twenty percent of the loss in lodgepole pine was from a combined attack of the mountain pine beetle and secondary bark beetles, in which it is problematical if the trees would have succumbed to the attack of the primary insect. Fill-in by secondary insects was necessary to overcome the tree. Twenty-seven percent of the remaining trees had been attacked unsuccessfully, leaving only slightly over 50 percent that had been killed. Windthrow and breakage amounting to 20 percent of the total trees attacked by the mountain pine beetle, probably made good bark-beetle host material of trees ordinarily offering normal resistance to attack. The preceding information shows that much of the infestation is of trees lightly attacked and concentrated in a more than normal number of weakened trees.

The increase in trees attacked by secondary bark beetles was probably in part due to an increase in favorable host material, in the form of broken-topped and uprooted trees. However, there was also considerable increase for which there is no apparent reason. From the limited data available, the main portion of the Gallatin Forest shows only the moderate increase just discussed. Observations from a high point and a strip run in the Tobacco Root Mountains in whitebark pine indicated a decided increase in infestation, there being redtop areas acres in extent in the vicinity of the divide between the Ruby and Madison River drainages at the head of South Meadow Creek.

Judging from a strip run on the Jack Creek drainage, east of Ennis, the infestation in whitebark pine is not as heavy as in the Tobacco Roots and shows no increase over the preceding year.

LOSSES FROM THE DOUGLAS FIR BEETLE

The Douglas fir beetle continues its devastation of the Douglas fir stands. On the southwest side of Hebgen Lake there are spots as much as five acres in extent on which there seems to be practically a 100 percent kill of the mature timber, with the losses in 1939 in adjoining timber equalling if not exceeding those of 1938. The slopes on the north side of the lake have not suffered as much loss but even there it has been heavy and is continuing. In Madison Canyon, west of the lake, losses have been heavy and seem equal to those in 1938. Not only have the trees in the open stand on the drier, steep, south exposures been attacked but also many trees in the more dense stands of the north-facing slopes on the south side of the canyon.

In Jack Creek the fading trees in 1939 are believed to be double the number noted in 1938.

Across the Gallatin River and east of the Gallatin Ranger Station in an area of Yellowstone Park bordering the Gallatin Forest, the heavy losses which have been occurring on a west-facing slope are apparently increasing. South of the station and on the same side of the river a fairly heavy infestation is developing.

From the Yellowstone Park boundary north along the Gallatin River and in the side drainages the infestation seems to decrease in intensity as far as the Karst Resort, although the 1939 losses seem heavier than those in 1938. An indication of the aggressive character of the infestation is seen in the appearance in 1939 of many new groups of fading trees.

Near the Squaw Creek CCC camp and on Squaw Creek, losses in 1939 were heavier than in 1938. There are believed to be twice as many trees in 1939 as in the previous year. New spots of infestation are appearing on all Douglas fir sites.

DEFOLIATION

Near the Squaw Creek CCC camp varying degrees of defoliation of Douglas fir were noted. Individual trees show almost complete loss of needles but no evidence of insect feeding. From condition of the affected foliage the presence of a needle cast fungus is indicated. It is possible the weakening of trees by this defoliation may result in further increases of the Douglas fir beetle infestation.

THE ENGELMANN SPRUCE BEETLE INFESTATION

Attacks by this beetle were present wherever observations were made or strips were run, but the infestation seemed comparatively light. The impression of the writer is that there were fewer trees attacked by this beetle in 1939, but the Engelmann spruce being killed along the Gallatin River are a distinct aesthetic loss to that river's beautiful setting.

CONCLUSIONS

No serious threat to the extensive lodgepole pine stands of this forest seem present in the light infestation noted in lodgepole pine. However, from the limited areas observed conditions in whitebark pine are somewhat serious and destruction of all larger trees of this species may occur within a few years. If this host material is destroyed there is the possibility of the insects invading the adjoining lodgepole pine timber and there building up a serious infestation.

In the areas observed the Douglas fir beetle outbreak is increasing except possibly in the Gallatin Canyon and the appearance of many new spots of fading trees seems to indicate a more aggressive infestation is developing.

What may be a needle cast fungus has caused varying amounts of foliage loss in the vicinity of the Squaw Creek CCC camp and individual trees have been almost completely defoliated. It is possible these weakened trees may be invaded by the Douglas fir beetle and still further accelerate the latter's increase.

Engelmann spruce does not seem to be suffering as much loss as in the previous years from the Engelmann spruce beetle.